

Time : 1 Hour 30 Minute

STD 10 Science  
Chapter Based Test

Total Marks : 50

SECTION A

\* Select and write one most appropriate option out of the four options given for each of the questions [7]

- We need 20% aqueous solution of sodium hydroxide for the study of saponification reaction. When we open the lid of the bottle containing solid sodium hydroxide we observe it in which form?  
(A) Colourless transparent beads.      (B) Small white beads.      (C) White pellets/flakes.      (D) Fine white powder.
- Identify the unsaturated compounds from the following:
  - Propane.
  - Propene.
  - Propyne.
  - Chloropropane.a. 1 and 2  
b. 2 and 4  
c. 3 and 4  
d. 2 and 3
- A saturated hydrocarbon has fifty hydrogen atom in its molecule. The number of carbon atoms in its molecule will be:
  - Twenty five.
  - Twenty four.
  - Twenty six.
  - Twenty seven.
- A hydrocarbon having one double bond has 100 carbon atoms in its molecule. The number of hydrogen atoms in its molecule will be:
  - 200
  - 198
  - 202
  - 196
- One of the following is not an allotrope of carbon. This is:
  - Diamond.
  - Graphite.
  - Cumene.
  - Buckminsterfullerene.
- The organic compound prepared by Wohler from an inorganic compound called ammonium cyanate was:
  - Glucose.

- b. Urea.
- c. Uric acid.
- d. Vinegar.

7. One of the following molecular formulae represents a ketone. This formula is:

- a.  $C_5H_{12}O$
- b.  $C_6H_{12}O_2$
- c.  $C_6H_{14}O$
- d.  $C_6H_{12}O$

\* **Assertion - Reasoning based questions.**

[3]

8. For question two statements are given- one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below:

- a. Both A and R are true, and R is correct explanation of the assertion.
- b. Both A and R are true, but R is not the correct explanation of the assertion.
- c. A is true, but R is false.
- d. A is false, but R is true.

**Assertion:** Diamond and graphite do not have the same crystal structure.

**Reason:** Diamond is crystalline while graphite is amorphous.

9. For question two statements are given- one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below:

- a. Both A and R are true, and R is correct explanation of the assertion.
- b. Both A and R are true, but R is not the correct explanation of the assertion.
- c. A is true, but R is false.
- d. A is false, but R is true.

**Assertion:** Saturated hydrocarbons are chemically less reactive.

**Reason:** All the valencies of carbon atom are satisfied by single covalent bonds.

10. For question two statements are given- one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below:

- a. Both A and R are true, and R is correct explanation of the assertion.
- b. Both A and R are true, but R is not the correct explanation of the assertion.
- c. A is true, but R is false.
- d. A is false, but R is true.

**Assertion:** Diamond is the hardest natural known substance.

**Reason:** Diamond is used for cutting marble, granite and glass.

\* **Fill in the blank with correct answer.[1 Mark each]**

[2]

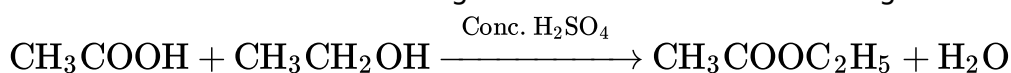
11.  $C_nH_{2n}$  is the general formula of \_\_\_\_\_.

12. \_\_\_\_\_ is better than soap for washing clothes when the water is hard.

\* **Answer the questions.[1 Mark each]**

[2]

13. What is the role of metal or reagents written on arrows in the given chemical reaction?



14. Write the IUPAC names of the following:

- i.  $\text{CH}_3\text{COCH}_3$
- ii.  $\text{CH}_3\text{COCH}_2\text{CH}_3$

### SECTION B

\* Answer the following question. :

[10]

1. Explain how coal was formed in the earth.
2. Draw the structures for the following compounds:
  - i. Ethanal.
  - ii. Propanal.
  - iii. Butanal.
  - iv. Pentanal.
3. How would you distinguish experimentally between an alcohol and a carboxylic acid on the basis of a chemical property?
4. Explain the given reaction with the example:  
Substitution reaction.
5. A compound 'X' has molecular formula  $\text{C}_4\text{H}_{10}$ . It undergoes substitution reaction readily than addition reaction. It burns with blue flame. It is present in LPG. Identify 'X' and give the balanced equation for its combustion and substitution reaction with  $\text{Cl}_2$  in presence of sunlight.

### SECTION C

\* Answer short answer questions. [3 Mark each]

[12]

1. Three organic compounds A, B and C have the following molecular formulae:
  - A  $\text{C}_4\text{H}_8\text{O}_2$
  - B  $\text{C}_4\text{H}_{10}\text{O}$
  - C  $\text{C}_4\text{H}_8\text{O}$
  - a. Which compound contains an alcohol group? Write its name and structural formula.
  - b. Which compound contains a carboxyl group? Write its name and structural formula.
  - c. Which molecular formula can represent an aldehyde as well as a ketone? Write the names and structural formulae of the aldehyde and ketone represented by this molecular formula.
2. Differentiate between saturated and unsaturated hydrocarbons.
3. Unsaturated hydrocarbons contain multiple bonds between the two C-atoms and show addition reactions. Give the test to distinguish ethane from ethene.
4. Why does micelle formation take place when soap is added to water? Will a micelle be formed in other solvents like ethanol also?

### SECTION D

\* Long answer questions [5 Mark each]

[10]

1.
  - a. In tabular form, differentiate between ethanol and ethanol acid under the following heads:
    - ii. Physical state.

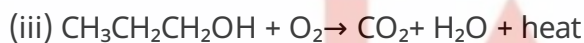
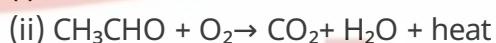
- iii. Taste.
  - iv.  $\text{NaHCO}_3$  test.
  - v. Ester test.
- b. Write a chemical reaction to show dehydration of ethanol.
2. a. Distinguish between ionic and covalent compounds under the following properties:
- i. Strength of forces between constituent elements'.
  - ii. Solubility of compounds in water.
  - iii. Electrical conduction in substances.

SECTION E

\* case - based/data -based questions

[4]

1. Four combustion reactions of carbon compounds are shown below.



8. What can be concluded from the four reactions?

Circle 'Yes' or 'No' for the correct response.

Can this be concluded from the reactions?	Yes or No
All carbon compounds release oxygen on combustion.	Yes/No
All carbon compounds release water on reacting with oxygen.	Yes/No
All carbon compounds produce carbon dioxide on reacting with oxygen.	Yes/No

9. Which reaction shows the combustion of a type of alcohol?

- A. Reaction i
- B. Reaction ii
- C. Reaction iii
- D. Reaction iv

॥ ज्ञानं एव श्रमस्य पुंजः ॥